

## **REMARKS**

The courtesies extended to the undersigned by Examiner Leo T. Hinze during the telephone interview held September 8, 2008 are acknowledged and appreciated. Applicants, their principal representatives in Germany, and the undersigned have carefully reviewed the Final Office Action of June 9, 2008 in the subject U.S. patent application, in which a Request for Continued Examination (RCE) is being concurrently submitted. In response to that Final Office Action, the claims of the subject application have again been amended. It is believed that the claims now pending in the subject application are patentable over the prior art cited and relied on, taken either singly or in combination. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

As discussed with Examiner Hinze, as set forth in the Substitute Specification, and as recited in the claims as currently pending, the subject invention is directed to a device for controlling registration in a printing press. Color density can also be controlled using the subject apparatus or device. As is discussed in detail in the Substitute Specification, and particularly at paragraph 011, an image sensor 22 is used to take a picture of an entire printed width of a printed substrate, at the exit of a plurality of printing units. The image sensor 22 sends the picture to a suitable evaluating unit 23, which is discussed at paragraph 012. The evaluating unit 23 can check all of the parameters of the picture of the printed image which are relevant to an evaluation of the effectiveness of the printing process being conducted. If the evaluation unit determines that the registration of one or more of the color components of the multiple color picture image is not correct, the cylinder responsible for the printing of that particular color can

be adjusted. If the ink density of one of the colors is not correct, the supply of ink to that cylinder can be corrected. The evaluating unit receives the color picture from the image sensor 22 and separates it into its various color components. The evaluation unit also receives a picture of a multiple color reference image that was formed in a pre-printing stage. That reference picture is also separated into its own individual color components. The evaluating unit is used to perform a relative position determination between each of the separate color components of the printed picture with each of the separate color components of the reference picture. Based on that relative position determination, actuators for the appropriate forme cylinders can be activated to shift the appropriate forme cylinder or cylinders to correct any register errors that were noted by the evaluating unit. In addition, as recited in claim 57, an ink supply to ones of the at least first and second printing formes responsible for printing the multiple color printed image, can be varied in response to the information provided by the evaluating unit.

In the Final Office Action of June 9, 2008, claims 55-67, 71-80 and 85-103 were rejected under 35 USC 103(a) as being unpatentable over U.S. patent No. 5,412,577 to Sainio in view of U.S. patent No. 6,332,397 to Bolza-Schünemann and further in view of U.S. patent No. 6,050,197 to Kipphan. Claims 68-70 and 84 were rejected under 35 USC 103(a) as being unpatentable over Sainio in view of Bolza-Schünemann and Kipphan and further in view of U.S. patent No. 6,810,813 to Chretienat. Claims 81-83 were rejected under 35 USC 103(a) over Sainio in view of Bolza-Schünemann and Kipphan and further in view of a second Sainio U.S. patent, No. 6,796,240.

In the rejections of claims 55 and 57 as being obvious over Sainio in view of Bolza-Schünemann and further in view of Kipphan, it was asserted that Sainio shows

the subject invention, as claimed, with the exception of the use of individual drives for each forme cylinder and the use of a previously printed multiple color image as the basis for the reference image. As was discussed with Examiner Hinze during the telephone interview of September 8, 2008, claims 55 and 57 have been further amended to more clearly point out the differences between the subject invention and the cited and relied on prior art.

One of the differences between the subject invention and the prior art is the provision of an evaluating unit that receives photographs or pictures of the multiple color printed image and of the reference image that separates this multiple color picture into separate color components and that determines a relative position of each such color component for both the product image and the reference image. This evaluation unit then issues the appropriate commands to the adjusting drive for each forme cylinder and/or to the controls for the ink fountain to correct any register and/or ink density issues that may arise. The Examiner is requested to review the discussion at paragraph 008 of the Substitute Specification for a discussion of the benefits that result from the subject invention, as recited in currently amended claims 55 and 57.

In the Final Office Action, it was asserted that Sainio includes an image sensor that is capable of recording a multiple color image of a width of the imprinting substrate. In the Sainio reference, at Column 5, lines 57-63, it is stated that a single camera having RGB and I outputs could be used to send color outputs to a computer 32. However, the sending of four separate color outputs to a computer is not the same as sending a complete color picture to an evaluating unit.

In the Sainio reference, the four separate color outputs taken from the printed image are compared with scans of the four printing plates that are used to produce the printed image. As discussed at Column 6, lines 14-26 a plate scanner 38 is usable to scan the four relevant printing plates before they are attached to their respective plate cylinders. This is not the same as using a reference image, taken from a pre-print stage of the printing press, as the standard against which the print image is compared. The four individual printing plates that are scanned in the Sainio reference will each have slight printing inaccuracies in their transfer of their respective ink colors from the plates to the printed image. The use of the reference image from the pre-print stage of the printing press provides the best standard for comparison with the image being printed during the operation of the press.

It was asserted that the secondary reference to Kipphan discloses the use of reference data taken from a scan of a printed multiple color image, referring to Column 8, lines 33-36 thereof. In that context, the Kipphan reference discusses the use of an off-line image-measuring device that is usable to provide the reference variable. However, in the subject invention, as recited in currently amended claims 55 and 57, the evaluating unit does the separation of each of the complete color pictures into their separate color components and then also does the positional analysis of the various color components. As is discussed in the Substitute Specification, the provision of a single evaluating unit provides the capability of evaluating and correcting all of the parameters that are relevant to the printing process in one unit and essentially all at the same time. There is no need, with the present invention, as recited in currently amended claims 55 and 57, for a separate off-line image-scanning device, as disclosed

in the Kipphan reference. The combination of the Sainio and Kipphan references would not render obvious the subject invention, as recited in currently amended claims 55 and 57.

In the rejection of claims 55 and 57, as well as various other ones of the claims, it was asserted that the Sainio reference shows an evaluating unit, indicated at 32, which is adapted to receive data on the multiple color printed image and to compare that data with reference data of a previously recorded image. It was further asserted that Sainio separates the image into color separations, referring to Column 10, lines 22-23. It is respectfully asserted that the features attributed to the Sainio reference either do not correspond to the subject invention, as recited in currently amended claims 55 and 57, or are misconstrued in the Office Action.

In Sainio there is provided a computer 32. As is discussed in Column 5 of Sainio, the computer 32 is a conventional type which receives the four separate colors from the camera assembly 36. The computer also receives the information from the plate scanner 38 with respect to the locations of the color printing areas on each of the four scanned printing plates. The computer 32 is also used to control the location and movement of the camera 36, through its positioning unit 34.

Referring now to the discussion at Column 9 of the Sainio reference, and starting at line 15, there is set forth a discussion of how the system 10 of Sainio compares the data from the reference areas of the printing plates, as determined during printing plate scanning, with the data produced by scanning the reference area of the printed image during printing. It is thus initially to be noted that the computer 32 does not receive pictures of full color images but instead receives separate single color inputs.

In the Office Action, the discussion in the Sainio reference, starting at Column 9, line 73 and continuing at Column 10, is asserted as showing that Sainio separates the image into color separations. That interpretation is not correct. In fact, the discussion in the Sainio reference, starting at Column 9, line 16 is directed to the conversion of the RGBI individual color inputs into CMYK values for each pixel. This is merely a conversion of one type of color information into another type of color information. A definition of a certain multiple color image, as provided by the four separate RGB and I inputs, is transformed into another definition of the same multiple color image, in terms of CMYK colors. This is not a determination of relative positions of individual color components of a picture of a print image and of a position of a reference image, as is done in the evaluating unit of the subject invention. The Sainio reference provides four separate color images to the computer 32. This is not the same as providing an evaluating unit with a complete picture of a multiple color image, and using the evaluating unit to both separate it into its individual color components and to determine relative positions of those individual color components for the purpose of pointing out inking register and/or color densities. Again, the Sainio reference does not function in the same manner as does the subject invention, as recited in currently amended claims 55 and 57.

Column 2, lines 39-45 of the Sainio reference are directed to comparison of color density arrays for use in determining a registration offset between first and second colors. This whole paragraph of Sainio is directed to color densities, not to relative positional determinations. In Sainio the printed image color densities are compared with reference image color densities. The reference image color densities are determined

from the scanning of the various printing plates which are used to produce the printed images. What Sainio is doing is comparing the color densities of the printed image with the color densities determined from a scan of the printing plates that have been used to position the printed image. Essentially, Sainio is comparing a theoretical color density, the scanned plate value, with an actual color density, the scanned image value, for the same image. This is not what is recited in claims 55 and 57 of the subject application, as amended. The separate color components of the pre-print referenced image, as provided by the evaluating unit, are compared, for relative positional determination, with the separate color components of the printed image. The pre-print image may have been formed by a separate process than the one used to print the actual image. It is not the same as in the Sainio reference where the colors of the print images are essentially being compared with themselves.

For these reasons, and as discussed with Examiner Hinze during the telephone interview of September 8, 2008, it is believed that claims 55 and 57, as amended, are patentable over the prior art cited and relied on. All of the rest of the claims now pending in the application are dependent, either directly or indirectly from one or the other of believed allowable independent claims 55 and 57. These claims are thus also believed to be allowable. None of the secondary references cited and relied on in the rejections of these dependent claims are believed to provide the teachings missing from the primary references.

## SUMMARY


Independent claims 55 and 57, as well as a number of the dependent claims, have been amended in an effort to further patentably define the subject invention over the prior art cited and relied on. In addition, a Request for Continued Examination (RCE) is being filed concurrently.

It is believed that the claims which are now pending in the application are patentable over the prior art cited and relied on, taken either singly or in combination. Allowance of the claims, and passage of the application to issue, is respectfully requested.

Respectfully submitted,

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